T.C.

ANKARA YILDIRIM BEYAZIT UNIVERSITY

INSTITUTE OF SOCIAL SCIECES

THE EFFECT OF HEALTH EXPENDITURES ON TOURISM: PANEL DATA ANALYSIS ON OECD COUNTRIES

MASTER'S THESIS

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DEPARTMENT OF ECONOMICS

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Supervisor: Assoc. Prof. Dr. Ibrahim DEMIR

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APPROVAL

This thesis titled “The Effect of Health Expenditures on Tourism: Panel Data Analysis on OECD Countries”, prepared by Şeyma Nur Arısoy under the supervision of Associate Prof. Dr. Ibrahim Demir has been accepted in partial fulfillment of the requirements for the degree of Masters of Arts in Economics at Ankara Yildirim Beyazit University by unanimous vote.

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Defense date: 23.09.2022

I certify that this thesis satisfies all the requirements of a thesis for a degree of Master of Arts in Economics.

Director of Institute of Social Sciences Prof. Dr. Yaşar Yiğit

DECLARATION

I hereby declare that all information in this has been obtained and presented in accordance with academic rules and ethical conduct. I declare that materials that are not original to this work are fully cited and referenced, otherwise, I accept all legal responsibility. 23.09.2022

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DEDICATION

To my lovely family...

ACKNOWLEDGEMENT

I am eternally grateful to Allah firstly, who gave me the strength to could start and could finish this thesis.

I would like to thank my advisor, my esteemed professor, Assoc. Prof. Dr. İbrahim Demir for his guidance, advice, encouragement, and support throughout my research.

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ABSTRACT

In this study, the effects of countries' health expenditures on international tourism receipts between 2008 and 2019 were empirically examined using panel data estimation methods. Since the current year's health expenditures are not expected to have an immediate impact on tourism receipts, health expenditures for the past two years are also included in the model. In addition, life expectancy, which represents the health risk for the longevity of countries, and GDP per capita, which represents economic indicators such as individual welfare, are included in the model.

The dependent variable of the established model is tourism receipts because of its substantial effect on the current account deficit problem, import dependency, and foreign exchange income. Thus, as a result of the analysis, policy recommendations provided to OECD countries on the impact of health expenditures on tourism receipts for the post-COVID-19 period.

The Hausman specification test was applied to select the appropriate model to be used in panel data analysis. A random effects estimator was chosen for the model. The problems of varying variance, autocorrelation, and cross-sectional dependency in the findings obtained with the random effects estimator was solved with Driscoll-Kraay resistant standard errors. The analysis was concerned with whether health expenditures current year and four lags of which were associated with tourism receipts.

While the current and three-year lags of health expenditures in OECD countries did not have a significant association with tourism receipts, four-year lag had a positive effect on tourism receipts. Life expectancy and GDP per capita also found to have positively affected tourism receipts. As a result of the findings, it can be concluded that the investments and improvements in the field of health can have an important role on tourism receipts, an important source of income for countries.

Key Terms: Tourism Receipts, Health Expenditures, Life Expectancy, OECD, Panel Data Analysis

ÖZET

Bu çalışmada, 2008 - 2019 yılları arasındaki uluslararası turizm gelirlerine ülkelerin sağlık harcamalarının etkileri panel veri yöntemleri ile deneysel olarak incelenmiştir. Mevcut yıldaki sağlık harcamaları turizm gelirlerine hemen bir etkisi beklenmediği için modele geçmiş dört yıla ait sağlık harcamaları da eklenmiştir. Ayrıca ülkelerin uzun ömür için sağlık riskini temsil eden yaşam beklentisi ve ekonomik büyüme, bireysel refah gibi ekonomik göstergeleri temsil eden kişi başı gayri safi yurt içi hasıla (GSYH) değişkeni modele dahil edilmiştir.

Kurulan modelin bağımlı değişkeni cari açık problemine, ithalat bağımlılığına ve döviz getirisine büyük etkisinden ötürü turizm gelirleri seçilmiştir.Panel veri analizinde kullanılacak uygun model seçimi için Hausman Spesifikasyon testi uygulanmış, model için rastgele etkiler tahmincisi seçilmiştir. Tesadüfi etkiler tahmincisiyle elde edilen bulgulardaki değişen varyans, otokorelasyon ve birimler arası bağımlılık problemleri Driscoll-Kraay dirençli standart hatalarla çözülmüştür. Bu sayede sağlık harcamalarının turizm gelirleri üzerinde etkili olup olmadığı belirlenmeye çalışılmıştır. Analiz sonucunda elde edilen bulgular, kullanılan modeldeki değişkenlerin turizm gelirleri üzerinde beklenen şekilde etkilediği görülmüştür.

OECD ülkelerinde incelenen dönemde sağlık harcamalarının mevcut yıl ve son üç yıl verilerinin turizm gelirleri için anlamlı bir etkisi yokken dört yıl önceki veriler turizm gelirlerini pozitif etkilediği gözlenmiştir. Beklenen yaşam beklentisi ve kişi başı GSYH değişkenlerinin de beklendiği gibi turizm gelirlerini olumlu etkilediği görülmüştür. Bulgular sonucu çalışmada özellikle COVID-19 sonrası dönemde ülkelerin bünyelerinde yapacağı sağlık alanındaki yatırımlar ve iyileştirmelerin, önemli bir gelir kaynağı olan turizm gelirleri için önemli bir role sahip olduğu sonucuna ulaşılmıştır.

Anahtar Terimler: Turizm Gelirleri, Sağlık Harcamaları, Yaşam Beklentisi, OECD, Panel Veri Analizi

CONTENTS

LIST OF ABBREVIATIONS

ARDL : Autoregressive-Distributed Lag

CD : Cross Sectional Dependency

G7 : Group of Seven

GDP : Gross Domestic Product

GLS : Generalized Least Squares

GMM : Generalized Method of Moments

ICDP : International Conference on Population and Development

LM : Lagrange Multiplier

OECD : The Organization for Economic Co-operation and Development

OLS : Ordinary Least Squares

UN : The United Nations

UNWTO : The World Tourism Organization

USA : The United States of America

USD : The United States Dollar

VECM : Vector Error Correction Model

VIF : Variance Inflation Factor

WB : The World Bank

WHO : The World Health Organization

WTO : The World Trade Organization

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1. INTRODUCTION

Tourism industry is one of the largest industries in the economies of many countries globally. The tourism sector generates income and affects the economies positively through a multiplier effect. Tourism sector generates employment and helps to earn foreign currency, which is particularly important for countries, such as Türkiye, where foreign deficit is an economic concern. Therewithal, tourism which has been one of the key factors of globalization is now widely accepted as related to countries' economic, services, and employment performance.

Tourism spending of visitors in a country is considered injection that results in expansion of economic activity through a multiplier effect. Therefore, tourism is an important revenue source and a mechanism for the redistribution of wealth between the rich and poor regions in a country. Tourism brings various people together and creates trust between different actors. It leads to the development of common preferences, forms of behavior, institutions, and norms. In short, tourism accelerates the process of global economic integration (OECD, 2020).

Tourism receipts dropped by %63.5 in 2020 compared to 2019 because travel restrictions remained high due to the coronavirus pandemic. Thus, 2020 and 2021 were the worst years on record for international tourism. This sharp decline represents a loss of 957 USD billion of revenue, globally, compared to 2019 (UNWTO, 2021). Tourism is of vital economic, social, and cultural importance in The Organization for Economic Co-operation and Development (OECD) member and partner countries. Tourism constitutes 4.4% of the Gross Domestic Product (GDP), 6.9% of employment, and 21.5% of service-related exports in OECD countries. OECD countries, which are among the world’s top tourism destinations, account for more than half (56.9%) of global arrivals and 61.1% travel receipts. In these countries, every 1 USD of expenditure by international tourists on average generates an estimated 89 cents of domestic value-added to overall export (OECD, 2020).

With the increasing mobility of human and national economies in the last decades, globalization has resulted in the internationalization of tourism demand (OECD, 2008). This has become an ever-growing challenge for international public health. The most important things for these tourists when choosing a travel destination are the infectious diseases in the region and the way of fighting them. It is estimated that the health of the people in the destination and the health expenditures made will increase the probability of attracting tourists (Rosselló et al., 2017).

COVID-19 has changed tourism expectations of travelers and global tourism sector has gotten affected negatively. With the experience of the impact of previous pandemics on tourism, it is predicted that the healthcare system of the countries will be one of the determinants of the number of tourists and tourism receipts.

Besides, due to COVID-19, the economic situation of OECD countries, as well as all over the world, has worsened and health expenditures have increased. For this reason, the share of OECD countries' health expenditures in GDP increased significantly in 2020. According to OECD data published in July 2021, health expenditure per capita was expected to increase by an average of 4.9% in 2020 compared to 2021 (OECD, 2021).

While it is possible to find studies on the relationship between tourism and various economic variables in the literature, the literature is lacking in explaining the relationship between health and tourism variables. In this thesis, to help close the gap in literature, the association between health spending and tourism receipts will be discussed for OECD countries. One of the features that distinguishes this analysis from other studies in the literature is that panel data analysis is conducted and OECD countries are studied in this study.

The study is laid out as follows: In the next chapter, the concepts and relationship between tourism and health will be explained. The characteristics and trends of tourism and health of OECD countries will be discussed. This chapter will show the size of tourism and health sectors in OECD countries.

In the third chapter, studies examining the impact of health expenditures on tourism sector especially on receipts will be reviewed. The methods and findings of the studies will be explored and gaps in the literature will be revealed.

In the fourth chapter, the data set and model to be used in the analysis will be defined. The framework for econometric methodology will be drawn for the analysis used in the thesis. The methods of analysis, tests, and corrections to the model will be explained. For this, it will be explained which sample and which period is used when creating panel data. In addition, depending on the purpose of the study, it will be explained which variable is determined as the dependent variable and which variables are determined as the explanatory variable.

In the fifth section, empirical findings will be evaluated. In this section, first, the correlation between independent variables will be checked. Then, the Hausman specification test will applied to decide on the model and the model will be estimated using the Driscoll-Kraay standard errors to correct the deviated standard errors.

According to the empirical result discussed in the last section, conclusions will be drawn for the OECD countries. Results of the empirical analyses will be interpreted and policy recommendations will be made according to the findings.

2. CONCEPTUAL FRAMEWORK OF TOURISM AND HEALTH EXPENDITURES

In this chapter, it is useful to show how tourism and health expenditures are related and how significant these are for the OECD countries. In this respect, first, the concept of tourism and health issues will be defined. Then, commonly used measures of tourism receipts and health expenditures will be provided. At the end of the chapter, recent trends in tourism receipts and health expenditures in the OECD will be discussed.

2.1. Tourism and Tourism Receipts

2.1.1. Tourism

Millions of people are constantly on the move to other cities or countries for temporary periods at any time of the year. During these movements, they benefit from the services of transportation, infrastructure, and accommodation facilities. Tourism activity is as old as human history. These movements of human beings, which have been on the move to other regions for various reasons for centuries, have been expressed using different concepts over time.

The concept of tourism comes from the Latin word 'tornus', which means 'to turn'. Thus, the word touring, which means "*the activity of visiting several places in a country or area to perform complete, be seen"* in English, was born (Comanescu, 2018).

In 1896, E. Guyer Freuler underlined the link between tourism and economic development as well as emphasized the motivation of travel in a study in which tourism was described as "a phenomenon of modern times" (Comanescu, 2018).

Hunziker (1940) was the one who gave a definition accepted by most studies today tourism economy: "*a set of relationships and phenomena resulting from the movement and stay of people out of their homes, as long as the stay and movement does not lead to a lasting*

settlement or results from any lucrative activity." (Hunziker, 1940). Krapf (1942) had a close position etymologically. Hereby, he formulated a more common and more elaborate point of view: "*the sum of the phenomena and relationships arising from the travel and stay of non-residents, insofar as they do not lead to permanent residence and are not connected with any earning activity*." (Hunziker & Krapf, 1942). This definition has been rearranged as: "*a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes.*" by the World Tourism Organization (UNWTO) as being generally accepted at the international level (UNWTO, n.d.).

Here, some operational definitions used for the tourism by the Committee of UNWTO to establish a common ground for a general understanding. These definitions are: tourism destination, destination management/marketing organization (DMO), tourism product, tourism value chain, quality of a tourism destination, innovation in tourism, the competitiveness of a tourism destination (UNWTO Tour. Defin., 2019). Among these, the definition of the quality of a tourism destination is important for this study. According to UNWTO, the quality of tourism destination shows up as a result of a process that means satisfaction of all tourism products and service needs, expectations of the tourists at an adequate price. In other words, it has been determined as the most important underlying factors such as security, accessibility, infrastructure, communication, hygiene, and regional health in determining the quality of the tourism destination (UNWTO Tour. Defin., 2019).

UNWTO divided basic forms of tourism into six forms under two main categories, internal and external. These are domestic tourism, inbound tourism, outbound tourism, internal tourism, national tourism, and international tourism. Domestic tourism refers to the travel activities of a resident visitor within a reference country. While inbound tourism refers to the activities of a non-resident visitor within a reference country on an inbound tourism trip, outbound tourism refers to the activities of a resident visitor outside the reference country. Internal tourism means domestic tourism and inbound tourism. It means the activities of resident and non-resident visitors within the reference country as part of domestic or international tourism trips. While national tourism covers domestic tourism and outbound tourism which are the activities of resident visitors within and outside the reference country, international tourism covers inbound tourism and outbound tourism which are the

activities of resident visitors outside the reference country and the activities of non-resident visitors within the reference country.

For the trip to be classified according to its main purpose, it is necessary to consider the main activities performed during the trip. The classification of United Nations (UN) (2010) elaborates and includes various categories that have been gaining attention since the 1993 Recommendations on Tourism Statistics. The main purposes are considered as personal, business, and professional. Personal includes all purposes of tourism trips that are not classified as business and professional trips. Personal travel includes holidays, leisure and recreation, visiting friends and relatives, education and training, health and medical care, religion/pilgrimages, shopping, transit, and others.

According to UNWTO report (2019), there are fourteen types of tourism: cultural tourism, business tourism, ecotourism, gastronomy tourism, rural tourism, adventure tourism, urban/city tourism, health tourism, mountain tourism, wellness tourism, education tourism, medical tourism, sports tourism, and coastal, maritime and inland water tourism (United Nations, 2010).

Especially traveling for healthcare and medical purpose becomes one of the fastest-growing types of tourism. As in all types, it increases foreign exchange earnings for destinations. Thus, an increasing number of countries present engaging opportunities for the healthcare and medical sector to encourage inbound tourism and increase tourism receipt (Uçak, 2016).

As seen, in tourism, different motivations lead people to travel. These can be psychological and sociological reasons, as well as opportunities such as developments in technology that direct the tourism movements of individuals.

2.1.2. Tourism Receipts

Besides measuring travel characteristics and tourist activities with non-monetary indicators, the contribution of tourism to the economy should also be measured by using monetary variables (United Nations, 2010). One of these monetary variables, which make significant contributions to the economies of countries to produce policies in line with tourism, is tourism receipts. Simply, tourism receipts refer to the expenditures by inbound

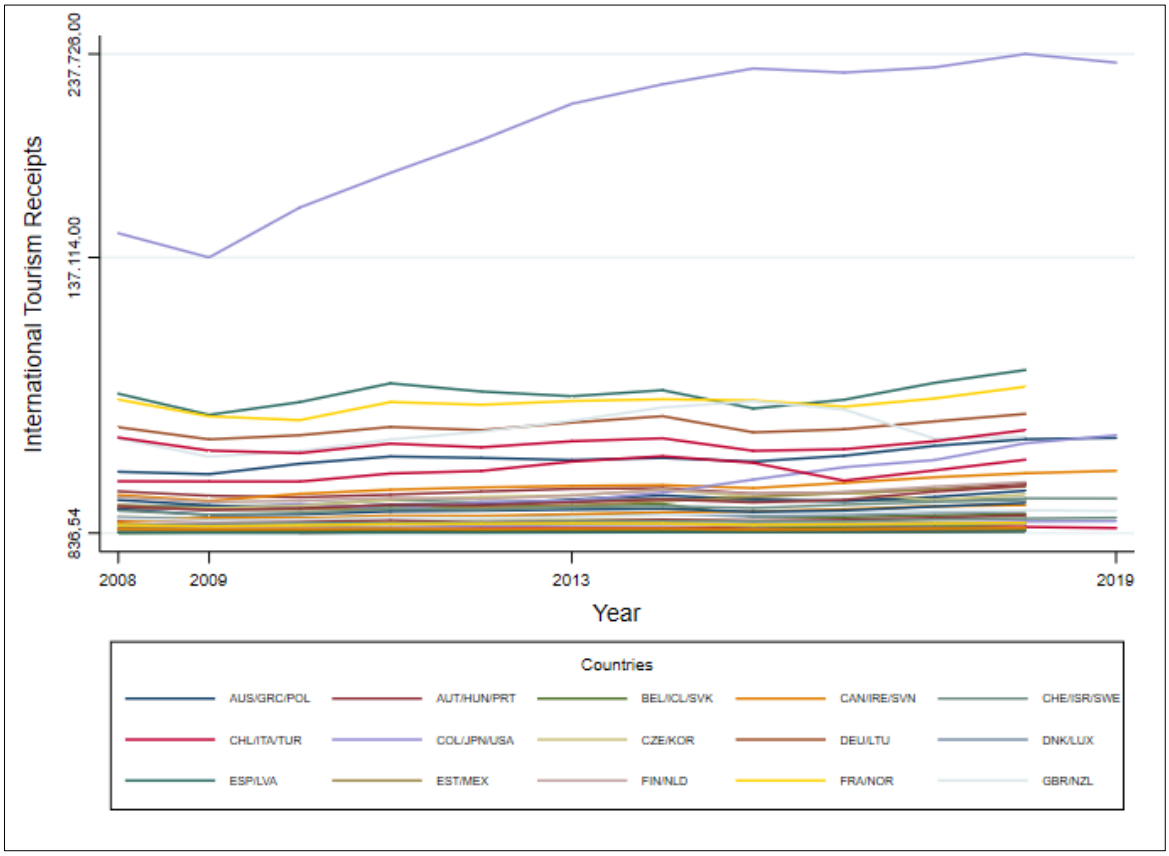
tourism in the reference country. Tourism receipts are the revenues obtained from sales of the goods and services that international visitors consume during their travels. While these receipts include same-day visitors' expenditures mostly, some countries do not include receipts for passenger transport items. All individual goods and services that the National Accounts System considers to be consumer goods or services that meet the wishes and needs of individuals may be part of tourism expenditures (United Nations, 2010).

According to United Nations Tourism Statistics Report (2008), when collecting tourism receipts data defined for use in the identification of personal consumption in general statistics should be classified according to their purpose. Because one of the most common ways to find out visitor spending, which is used to calculate tourism receipts, is to ask them to group their expenditures according to their purpose. This classification includes, travel packages, package holidays and package tours, accommodation, food and drink, local transports, international transport, recreation, culture and sporting activities, shopping, and others (United Nations, 2010).

Tourism receipts are necessary for countries' economies because they create value-added directly or indirectly. Thus, tourism is analyzed with a value-added approach to show that tourism receipts have a greater impact on the domestic economy than general exports and have significant effects on upstream industries that are related to the exploration and initial production stages of the oil and gas industry (OECD, 2020).

Globally, international tourism receipts, which are in a growth trend, reached 3% in 2019 compared to USD 1.48 billion in the previous year. Similarly, tourism export has tripled since the turn of the century, reaching USD 1.7 trillion in 2019, accounting for 7% of global exports and 28% of global services exports. Based on these figures, the World Trade Organization (WTO) estimates that tourism is the fifth largest traded service sector (UNWTO, 2020). According to the OECD Tourism Trends and Policies report, OECD countries with a positive travel trend accounted for 50.5% of global tourism revenues and 61.1% of global tourism expenditures in 2018 (OECD, 2020). The growth trend in 2008-2019 of tourism receipts for OECD countries can be seen in Figure 2.1.

Figure 2.1 International Tourism Receipts for OECD Countries in 2008-2019 ($)



Source: Formed using data from OECD.Stat, https://stats.oecd.org/, access date; 27.04.2021

As can be seen in Graph 2.1, after the Great Recession of 2008, OECD countries experienced a significant slowdown in their tourism receipts and then showed a stable progress. Among these countries, the country with the highest tourism receipts and growth trend is the United States of America with 237.7 billion USD. Then, Spain (81.5), France (73.2) and Germany (59.8) follow to USA. The top ten countries among OECD include also Italy (51.8), Japan (45.3) and Canada (30.4). Türkiye is among the top ten countries with 37.1 billion dollars among OECD countries with more than one trillion-dollar tourism receipts in 2018.

2.2. Health and Health Expenditure

2.2.1. Health

To describe the term health, the historical process of attitudes and thoughts about health should be explained. In ancient civilizations such as ancient Greece, Indian, and Chinese, the concept of health as “a balance between a person and the environment, the unity of soul and body, and the natural origin of the disease” was the basis of the perception of health. Therefore, many known philosophers and scientists have worked for the correct definition of health. Since the 5th century B.C., some philosophers such as Pindar have examined the physical dimension of the concept of health. Pindar defined health as feelings of physical comfort or the absence of physical pain and generalized it as "*harmonious functioning of organs*". Besides Pindar, Plato revealed that to achieve the ideal of a perfect human being, “*a healthy mind in a healthy body*”, people need not only physical comfort but also internal harmony with the social environment. Similarly, Aristotle emphasized the necessity of regulating the relations in the society to protect the health of the members of the society and to ensure that they can work harmoniously. One of the important philosophers for medical science who is Hippocrates explained health in connection with environmental factors and lifestyle. Hippocrates, the creator of the concept of “*positive health*”, based on the primary human structure (genetics), diet, and exercise, stressed that proper nutrition and exercise are necessary for health, as well as seasonal changes have a significant impact on the mind and body (Svalastog et al., 2017).

Health, which had strong changes in its definition by being influenced by beliefs and the church in the Middle Ages, became an economic concept as enabling good conditions and working ability and reducing the lost work days due to illness during the Industrial Revolution. As a result, the value of health has come to the fore with the value it provides to the economy. With the increase in competitive environments, health has started to be defined with the ability of people to adapt to the effects coming from the environment to the extent that they can tolerate and resist. It was assumed that when this adaptation ended, wellness ceased and illness arose as a natural consequence (Svalastog et al., 2017). Before the Industrial Revolution, Ibn Sina touched on a similar topic for the concept of health. He defines health as a feature or condition that results in the normal functioning of the human body. He assumed that health is a steady-state, while disease occurs with a decline in health.

Therefore, every time an individual leaves a healthy state, illness arose (Saffari & Pakpour, 2012).

In the modern age, concepts of health recognize health as more than the absence of disease. It is a "*relative state"* in which one can function well physically, mentally, socially, and spiritually to describe all of the potentialities of an individual within the environment in which one lives. According to Aaron Antonovsky (1979) to study the factors that cause the disease, it is necessary to find out the origin of health. Explaining this with the salutogenesis theory, Antonovsky associated the concept of health with stress and coping skills.

The World Health Organization (WHO) defined the concept of health as *"Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"* (WHO, 2020). The WHO included this definition in its Constitution at the time of its establishment in 1948. Thus, it has formalized the understanding of health in the modern period. As a result of previous comments on the concept of health, the WHO for the first time suggested that in addition to physical and mental health, social welfare is an integral part of general health. In this way, the definition of WHO draws attention to the fact that health is closely linked to the social environment and living and working conditions. For the WHO, defining health in social and spiritual terms has been critical for creating policies and programs to protect and improve health. Thus, it has changed the widespread opinion that health simply means the absence of disease. (Svalastog et al., 2017).

2.2.2. Health Expenditure

Health expenditures are defined by taking into account the objectives for improving the country's health system, regardless of the activities of the institutions providing or financing the service (Food and Health Bureau of the Hong Kong, 2018). Similarly, OECD described health expenditures as "*giving a measure of the final consumption of health goods and services*" (OECD, 2021).

According to WHO, health expenditure comprises all expenditures for the provision of health services, family planning activities, nutrition activities, and emergency aid set for health, but excluding the provision of drinking water and sanitation (WHO, n.d.). The World Bank (WB) divides health expenditures into public expenditures and private expenditures.

It assumes that low-income economies have a higher share of private health expenditures than middle-income and high-income economies, and found that direct household expenditures make up the largest portion of private expenditures (The World Bank, n.d.).

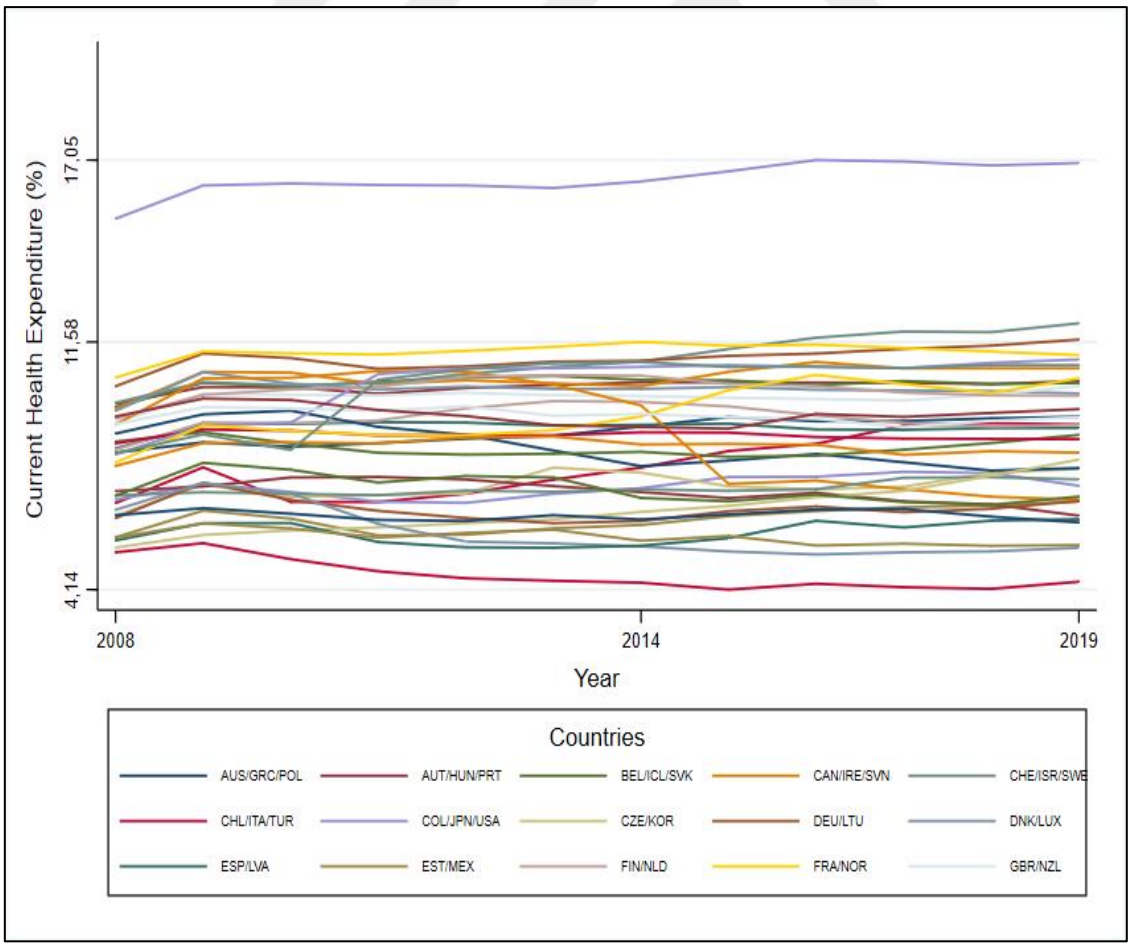
The WB considers health financing, which is established to finance these expenditures, as a critical component of health systems. Health accounts established to finance health expenditures, on the other hand, enable countries to monitor health expenditures in more than one set of indicators, independently of those who finance and manage the expenditures collected within an internationally accepted framework. With this system, countries can produce policies by obtaining reliable data on health expenditures. In this way, it makes it possible for expenditures to give accurate results (WHO, n.d.). Understanding the details of health expenditures allows countries to improve their health systems and ultimately serve people more equitably and better (WHO, n.d).

Similarly, the OECD attributes the level and variation of health expenditures to the financing and regulation of the health system, along with various social and economic factors (OECD, 2021). The WHO examines health expenditures as three indicators as 'general government expenditure on health services as a percentage of total government expenditure', 'total expenditure on health services as a percentage of the gross domestic product' and 'per capita total expenditure on health' (WHO, n.d.). OECD defines one of these indicators 'the level of per capita health spending' as "*covering both individual and population health care needs, and how this changes over time, depends on a wide range of demographic, social and economic factors, as well as the financing and organizational arrangements of the health system*" (OECD, 2021).

In 2019, adjusted for differences in countries' purchasing power, average per capita health care spending in OECD countries was estimated to be about USD 4 100. The United States ranks first, spending almost USD 11 000 for each citizen, followed by Switzerland, Norway, and Germany, which spend more than half of the US spending on health services, with about USD 7 000. Health expenditures per capita in the United Kingdom, Italy, and Spain, which have seen a large number of COVID-19 cases in the last period, are around the OECD average. China, the country of origin of the COVID-19 epidemic, which is a global determinant in 2020, is almost 20 percent below the average, accompanying India and Indonesia with the lowest health expenditures. Türkiye, on the other hand, is among the

countries with the lowest per capita spending on health services, with a health care expenditure of USD 1 267 per capita, which is about a quarter of the OECD average. At the time of publication of the report, the OECD estimated that in 2020 a general health services expenditure of more than 4.7% was made for a subset of OECD due to the impact of the COVID-19 pandemic (OECD, 2021). In its analysis for 22 countries with mostly developed economies, the WTO noted that per capita health care spending increased by 4.9% (WTO, 2021). In the same report, WTO states that the share of health care expenditures in GDP increased to 10.1% for the seventeen high economies in 2020 compared to the previous year and 6.3% for the five middle- and low-income economies. WTO analyzed that while the United Kingdom had the largest decline in GDP per capita, it had the largest increase in health care expenditure as a share of GDP among these countries and while the GDP per capita increased in Iran, the only exception among the analyzed countries, the share of health expenditures in GDP decreased.

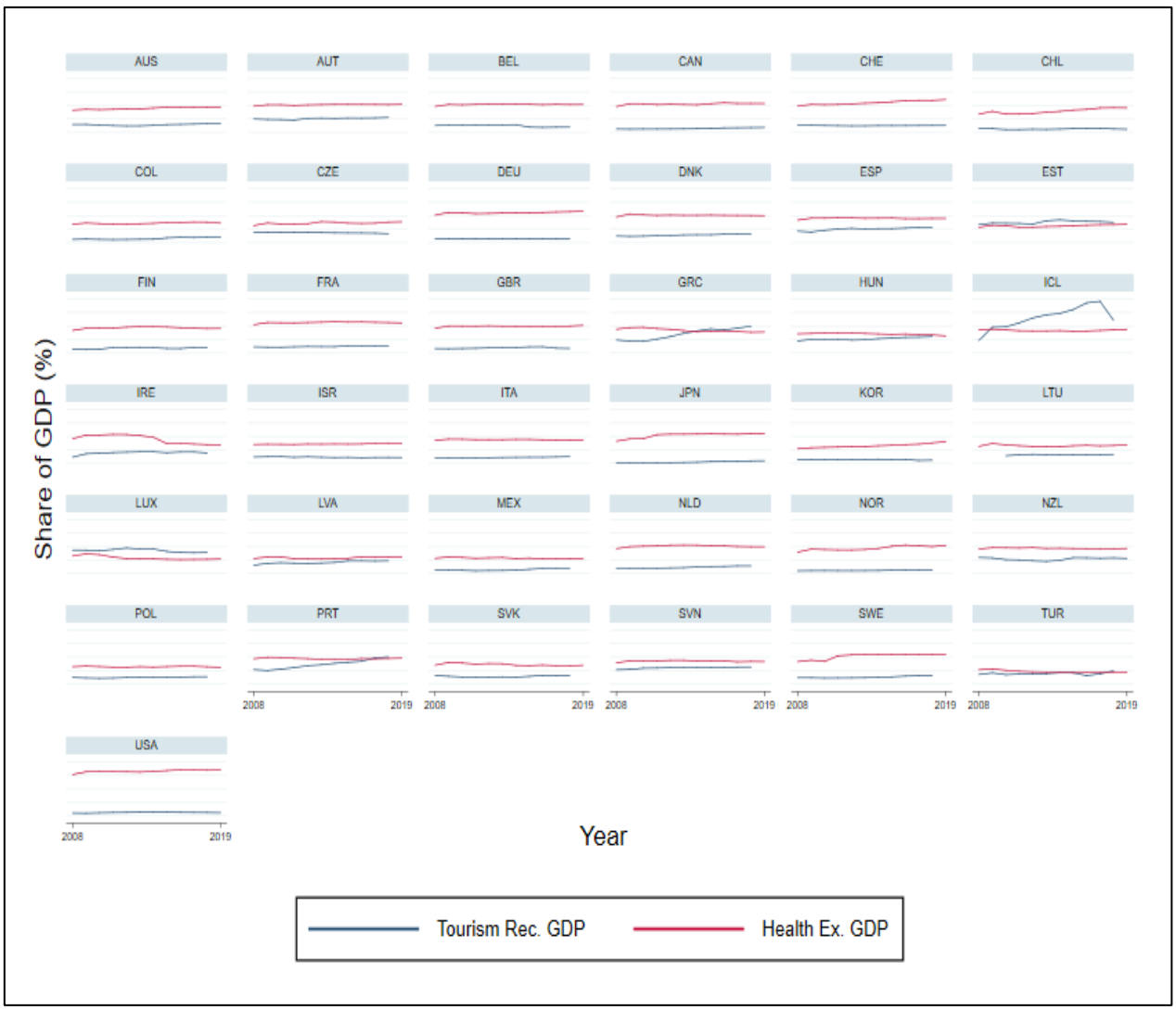
Figure 2.2 Current Health Care Expenditure on Health Services in GDP for OECD Countries (2008-2019, %)



Source: Formed using data from OECD.Stat, https://stats.oecd.org/, access date; 27.04.2021

As shown in the figure above, although there are some breaks in health services expenditures in some countries, stable growth is observed in general. The country with the highest share of GDP in health expenditures is the United States of America with almost 17%, as tourism receipts (Figure 2.1). Among the top ten countries are some European countries such as Germany (11.65%), France (11.19%), Japan (11.06%), and Canada (10.79%). However, the share of health care expenditures in Türkiye in GDP is the lowest at 4.38%.

Figure 2.3 Tourism GDP and Current Expenditure on Health as Share of GDP for OECD Countries (2008-2019, %)



Source: Formed using data from OECD.Stat, https://stats.oecd.org/, access date; 27.04.2021

Figure 2.3 shows the share of countries' health expenditures in GDP and the changes in tourism GDPs of OECD countries over years. It is seen that the share of health services expenditures in GDP is mostly higher than tourism such in USA, Germany, and Japan. In

some countries like Türkiye and Spain, these two indicators have similar share of GDP while Iceland has had a different scheme from the other countries since 2010 with an increasing share of tourism receipts in GDP.

3. LITERATURE REVIEW

There is increasing literature on the tourism sector, which makes a serious contribution to the economies of countries. Along with the COVID-19 pandemic that has affected the world in recent years, the impact of the health sector on the tourism sector, which has made such a contribution to the economies of countries, is a matter of curiosity. When the literature is examined to explain the relationship between tourism and health variables, the relationship is generally analyzed on health tourism, infectious diseases, and human capital development. The effects of these variables on various macroeconomic variables are questioned in many studies. There are relatively limited number of studies that directly or indirectly address the relationship between health expenditures and tourism. In the majority of these studies, the effects of education and health sectors as human capital variables or the epidemics that have affected the world before, on various tourism variables have been discussed. The COVID-19 epidemic, which has a great impact on the global economy, will also be a determinant in the future. Therefore, it has been deemed necessary to discuss how the expenditures of countries on health care services will affect tourism receipts.

Table 3.1 shows literature review of empirical studies that used time series and panel data analysis on health care and tourism relationship. Table 3.1 provides information on the sample used, author(s), study period, econometric method used, and the findings related to the hypothesis, regarding studies in literature.

Table 3.1 Selected Empirical Studies on Tourism and Health

	Empirical Study	Country / Region	Period	Method / Used Model	Empirical Findings
1	Lee (2009)	Singapore	1980 – 2007	Time Series Method Cointegration and Granger Causality Test	When a unidirectional long-run relationship between the health and tourism sector has been found, a no relation between these two sectors in the short-run has been not found.
2	Lee and Hung (2010)	Singapore	1978 – 2007	Time Series Method Cointegration and Granger Causality Test	It has been found that government health expenditures per capita and total tourism arrivals, which are proxies of the tourism and health sectors, affect each other in the short-run when GDP per capita which is a proxy of the economic development is the dependent variable.
3	Hung et al. (2012)	Taiwan	2006	Quantile Regression Method Ordinary Least Squares (OLS) Regression Analysis	There is a significant negative relationship between medical and health care expenses of household and percentage of household income spent on tourism (PTE). The medical and health care expenses are the key determinants of household tourism expenditures in Taiwan.
4	Li et al. (2013)	Malaysia	1974 – 2010	Time Series Method Granger Causality Test in Vector Error Correction Model (VECM)	The authors analyzed two types of tourism data in the analysis modeling economic growth, tourism, and various macroeconomic indicators. While one of them, real tourism receipts, has no relationship with health in the short-run, a bidirectional relationship has been found in the long-run. On the other hand, there is both long-run and short-run relationship from real government tourism expenditures to health.

5	Chan-Fatt and Abdul-Rahim (2014)	Malaysia	1981 – 2011	Time Series Method Autoregressive-Distributed Lag (ARDL) and Granger Causality Test	Tourism arrivals affect to health expenditures in long-run indirectly and negatively.
6	Ozturk (2015)	34 countries	2005 – 2013	Panel Data Method Panel Cointegration Tests	The author analyzed three types of tourism data to tourism development in the analysis modeling economic growth, tourism, and energy demand indicators. According to results, health expenditures increased tourism development including all types of tourism data in the region.
7	Zaman et al. (2015)	34 countries	2005 – 2013	Panel Data Method Two Stage Least Square Regression Analysis Dumitrescu Hurlin Panel Causality Test	The Tourism Development Index that includes tourism expenditures, tourism receipts, and tourist arrivals has been used. It has been found that health expenditures affect the Tourism Development Index indirectly in the region.
8	Folarin et al. (2017)	25 African counties	1998 – 2014	Panel Data Method Two-Step System Generalized Method of Moments (GMM) Estimation	By controlling for other factors, an increase in tourism receipts and tourist arrivals will lead to an increase in life expectancy at birth as a healthcare development.
9	Qureshi et al. (2017)	37 countries	1995 – 2015	Panel Data Method Panel GMM Estimation Panel Granger Causality Test	It has been concluded that there is a bidirectional causality relationship between sustainable tourism, health, and economic growth.
10	Sokhanvar et al. (2018)	98 countries	2009 - 2013	Panel Data Method Two Stage Least Square Estimation Analysis	As a sub-indicator, the health variable which includes health infrastructure, basic health outcomes, and preventative care, has a negative impact on international tourism expenditures. The authors explained this as if countries have better healthcare, travel for health reasons

					will decrease, thereby reducing international tourism expenditures.
11	Nassani et al. (2018)	16 tourist-oriented countries	1990 - 2014	Panel Data Method Panel GMM Estimation Dumitrescu Hurlin Panel Causality Test	The health expenditures positively impact on tourism receipts affecting economic growth and current deficit. The causality test result is that health expenditures cause tourism variables included in the crime rate and vulnerability index.
12	Ceviker and Ozcan (2020)	G7 countries	1995 - 2017	Panel Data Method Panel Granger Causality Test	For the overall panel, there is no causal relationship between health expenditures and the number of tourists they send.

Lee (2009) analyzed the role of the healthcare industry in international tourism and the impact of international tourism on the state of healthcare in Singapore. While doctors per 10 000 total population data was used as the health sector variable, the total tourist arrivals data was used as the measure of international tourism demand in the analysis. As a result of the analysis, a unidirectional long-run relationship from health to tourism has been found while no relation between these two sectors in the short-run has been not found. In other respect, another analysis Lee published with Hung (2010) mentions a short-term relationship between health and tourism for Singapore. As a result of the analysis, government health expenditures per capita and total tourism arrivals, which are proxies of the tourism and health sectors, affect each other in the short-run in a model where GDP per capita which is a proxy of the size of the economic activity is the dependent variable.

Li et al. (2013), used two different tourism variables for the model in their studies for Malaysia. While one of them, real tourism receipts, has no relationship with health in the short-run, a bidirectional relationship has been found in the long-run. On the other hand, there is both long-run and short-run relationship from real government tourism expenditures to health. Thus, similar to Lee (2009, 2010), in this study, it has been determined that the health sector, along with other macroeconomic variables, encourages the growth of tourism revenues for the Malaysian economy and therefore offers an indirect way for economic growth. The results of Chan-Fatt and Abdul-Rahim's study (2014) are in contrast with the study done by Li et al. (2013), which was based on the same country Malaysia, and similar data set. Using the real health services expenditure data per capita by the government as a representative of Malaysian health sector development, Chan-Fatt, and Abdul-Rahim (2014) found that tourism arrivals affect health expenditures in the long-run indirectly and negatively. The main reason for this discrepancy could be the difference in model and methodology. In addition, Chan-Fatt, and Abdul-Rahim (2014), referring to Lee and Hung's analysis (2010), consider the contrast between health and tourism as the development of two countries even though they use similar methods.

Ozturk (2015) found similar results that were positive using the panel data method for 34 developed and developing countries. Ozturk (2015) used three different dependent tourism variables (international tourism receipts, international tourism expenditures, and international tourist arrivals) in the model created by using economic growth, tourism, and energy demand and found that tourism variables were significantly related to health care

expenditures. According to results, health expenditures increased tourism development including all types of tourism data in the region. In the study of Zaman et al. (2015), as seen in Ozturk (2015), three same tourism variables (international tourism receipts, international tourism expenditures, and international tourist arrivals) were used for the tourism development indicator in a panel of three diversified World's regions including thirty-four countries between 2005 and 2013. The Tourism Development Index was created to use in the model by using all the three tourism development indicators. As a result of the analysis, it has been found that health expenditures affect the Tourism Development Index indirectly in the region as in the previous analysis.

Among the reviewed literature, the only study examining the relationship between tourism and healthcare for Africa is the study of Folarin et al (2017). In parallel with the studies mentioned before, life expectancy at birth as a healthcare development data was found to be positively related to tourism receipts and tourist arrivals in the 25 African countries. Similarly, Qureshi et al. (2017) for 37 selected countries and Nassani et al. (2018) for 16 selected countries found a relationship between tourism and health-related variables in similar periods.

On the other hand, similar to the analysis of Chan-Fatt and Abdul-Rahim (2014), Hung et al (2012) for only Taiwan and Sokhanvar et al (2018) for 98 selected countries found a negative relationship between tourism and health-related variables. In Sokhavar's analysis, as a sub-indicator, the health variable which includes health infrastructure, basic health outcomes, and preventative care, has a negative impact on international tourism expenditures. The authors explained this as if countries have better healthcare, travel for health reasons will decrease, thereby reducing international tourism expenditures. Congruently, in Hung's analysis, it has been found that there is a significant negative relationship between medical and health care expenses of household and percentage of household income spent on tourism (PTE). Thus, the medical and health care expenses are the key determinants of household tourism expenditures in Taiwan.

In Ceviker and Ozcan's (2020) analysis, a recent study, no relationship was found between health expenditures and the number of sending tourists for the Group of Seven (G7) countries between 1995 and 2017. However, the authors expect based on individual panel findings that health sector development could have positive effects on international tourism in the long-run.

As seen in the studies reviewed, most studies have examined the relationship between tourism and issues such as health tourism, infectious disease, and human capital development. For this analysis, causality analysis was frequently used. Inspired by these studies, it was aimed to directly reveal the relationship between tourism revenues and health expenditures for this study. For this reason, the panel data analysis random effect model was preferred for model estimation. In addition, OECD countries, which also include top destination countries, were chosen as samples. Thus, both important Mediterranean countries, top tourism destinations, and countries with strong economies were included in the analysis.

4. RESEARCH METHODOLOGY

The structure of data, i.e., whether data are cross-sectional, time series or both, usually drives the method of analysis in a given research. Many individual country studies used causality test for the relationship between tourism and health-related variables is frequently encountered in the literature. No study that analyzed the relationship between tourism and health-related variables for OECD countries has been found. This study uses panel data analysis. The main advantage of panel data is its dealing with unobservable factors in group and time dimensions. It provides better policy-related information for economic implications compared to time series and cross-sectional analysis. Specifically, estimations include previous years' health care expenditures, life expectancy at the birth, and GDP per capita.

The findings were analyzed from a theoretical point of view and various suggestions were provided for countries to be implemented after COVID-19. This section will focus on the empirical analysis of the study, the framework of the analysis, and the content of the model.

4.1. Empirical Methodology

4.1.1. Panel Data Model

The availability of the proper data for the analysis in hand is what determines if an econometric analysis will be successful. Time series, cross-section, pooled-cross section, and panel data estimation methods are the different types of data types that can be used in empirical analyses. A time series is a set of observations on the values of one or more variables over a period of time. The time series data bared some problems like stationary for empirical analysis, despite time series data being used heavily in econometric studies (Gujarati & Porter, 2009). Cross-sectional data are data gathered simultaneously values for one or more variables for a number of sample units, or subjects. The cross-sectional data also have its own problems such as the problem of heterogeneity (Gujarati & Porter, 2009).

A panel or longitudinal data consists of both cross-sectional and time series data and the terms used for panel data fundamentally refer to the movement of cross-sectional observations over time (Gujarati & Porter, 2009). The method of estimating economic relations through panel data models created with cross-sectional data with time dimensions is called panel data analysis (Tatoğlu, 2012). Baltagi (2005) and Gujarati & Porter (2009) listed the advantages of using panel data in econometric analyzes compared to using time series data and cross-sectional as follows:

- Panel data must include heterogeneity because they relate to individuals, firms, states, countries, etc. in time series. The panel data estimation techniques consider such heterogeneity as they allow subject-specific variables (Gujarati & Porter, 2009).
- Panel data provide "*more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency*." (B. H. Baltagi, 2005)
- Panel data allows for examining cross-sections of repeated observations. In this way, panel data are more suitable for examining the dynamics of change that is using mostly unemployment, job turnover, and labor mobility (Gujarati & Porter, 2009).
- Panel data can better identify and quantify effects that only cross-section or only time series data cannot simply detect.
- Panel data can handle more complex behavioral models than cross-sectional or time series data.
- Panel data can reduce the bias that could affect when collecting data on individuals or firms in large groups.
- Because of macro panel data has a longer time series, unit root tests do not have non-standard distribution problems, unlike time series analysis (Baltagi, 2005).

Consequently, panel data provides to enrich empirical analysis in ways that cannot be done by using only cross-section or time series data. Although panel data has much more advantages, it has also some limitations. Baltagi (2005) also mentioned the limitations with panel data modeling as follow:

- According to Baltagi, Kasprzyk et al., (1989) discussed data collection and data management in the contexts of coverage, nonresponse, recall, frequency of interviewing, interview spacing, reference period, the use of bounding and time-in-sample bias.

- Defacement of measurement errors caused by incorrect output due to unclear questions, memory errors, deliberate distortion of responses, inappropriate informants, misrecording of responses and interviewer effects (B. H. Baltagi, 2005).
- Including self-selectivity, nonresponse, and attrition, selectivity problems can be encountered (B. H. Baltagi, 2005).
- Short time series dimension makes it asymptotic as the number of individuals in micro-panels goes to infinity (B. H. Baltagi, 2005).
- Since the cross-country dependency is not considered in long time series, macro panels on countries or regions cause misleading inferences. Alternative panel unit root tests must applied that account for this dependence (B. H. Baltagi, 2005).

The concepts frequently encountered in panel data analysis are balance – unbalance panel, individual – time effect, heterogeneity and cross-sectional dependency. A balanced panel means that each individual is observed all the time when panel data is observed. In contrast, an unbalanced panel indicates that the number of time series observations differs between individuals (Gujarati & Porter, 2009). As mentioned earlier in panel data, it consists of many individuals coming together in a certain period of time. Variables that reflect the properties of individuals are called individual effects. The individual effect is a variable that varies with individuals and is constant over time. Like individuals, time series have their characteristics. Variables with these properties are also called time effects. The time effect that a constant variable in individuals and a time-varying variable in time series (Tatoğlu, 2012).

A panel data regression differs from a regular time-series or cross-section regression in that it has these two dimensions together as follows;

$$Y_{it} = \alpha + \beta_{1it}X_{1it} + \ldots + \beta_{kit}X_{kit} + u_{it} \quad i = 1, 2, \ldots, N \; t = 1, 2, \ldots\ldots, T \qquad \textbf{(4.1)}$$

or shortly,

$$Y_{it} = \alpha + \sum_{k=1}^{K} \beta_{kit} X_{kit} + u_{it} \quad i = 1, 2, \ldots, N \; t = 1, 2, \ldots\ldots, T \qquad \textbf{(4.2)}$$

Of the subscripts, *i* represents the cross-section dimension and *t* represents the time series. α is a constant term, β is $K \times 1$ dimensional parameter vector and X_{kit} is the it^{th} observation on *K* explanatory variables and Y_{it} is the value of the dependent variable for the i^{th} individual at time *t* (B. H. Baltagi, 2005).

Panel data models are classified into five categories, depending on whether the parameters take values by individual and/or time (Hsiao, 2003):

1. Slope coefficients are constant, and the intercept changes over individuals.

$$Y_{it} = \beta_{0i} + \sum_{k=1}^{K} \beta_k X_{kit} + u_{it} \quad (4.3)$$

2. Slope coefficients are constant, and the intercept changes over individuals and time.

$$Y_{it} = \beta_{0it} + \sum_{k=1}^{K} \beta_k X_{kit} + u_{it} \quad (4.4)$$

3. All coefficients change over individuals.

$$Y_{it} = \beta_{0i} + \sum_{k=1}^{K} \beta_{ki} X_{kit} + u_{it} \quad (4.5)$$

4. All coefficients change over time and individuals.

$$Y_{it} = \beta_{0it} + \sum_{k=1}^{K} \beta_{kit} X_{kit} + u_{it} \quad (4.6)$$

5. All coefficients are constant over time and individuals.

$$Y_{it} = \beta_0 + \sum_{k=1}^{K} \beta_k X_{kit} + u_{it} \quad (4.7)$$

where i = 1, …, N and t = 1, …, T for all equation.

The final model (4.7) is called the classical model and heterogeneity is not mentioned because both the constant and slope parameters do not vary with individual or time. As in (4.3) and (4.4), the slope parameter is constant while the heterogeneous constant parameter (varying based on individual and/or time) models consider cross-section dependencies (Hsiao, 2003). In addition, the 'One-Way Panel Data Model' refers to the models that vary only according to individuals, while the 'Two-Way Panel Model' is called the models that vary according to both individuals and time (B. H. Baltagi, 2005); (Tatoğlu, 2012).

4.1.2. The Fixed Effect Model

In the use of panel data, unobservable individual effects occur in each unit. If these effects are treated as a predictable parameter for cross-section observation, a fixed effects model is applied. If the model has a constant slope coefficient and an intercept that varies

only with the cross-section or only with the time series, or with both the cross-section and the time series, this model is a fixed effects model. It can be written as (Hill et al., 2011);

$$Y_{it} = \alpha_i + \beta_1 X_{1it} + \ldots + \beta_k X_{kit} + u_{it} \quad (4.8)$$

Here, the slope coefficient is the same for all countries (cross-sections), while the intercept takes on different values for different individuals. All behavioral differences between the individual are called individual heterogeneity and are assumed to be captured by the intercept. As in (4.8), individual intercepts include individual-specific, that is, time-invariant, characteristics in control variables. Thus, the model becomes a fixed effect model (Gujarati & Porter, 2009; Hill et al., 2011).

For the above reasons, it becomes possible to correlate the individual effects and the explanatory variables in the fixed effects model, that is, to be different from zero. It is also assumed that the explanatory variables are independent in error terms. Based on (4.8), the fixed effects model assumptions are as follows:

$$\alpha_{it} = \alpha_i = \bar{\beta}_0 + \mu_i \; ; \beta_{1it} = \beta_1 \; ; \ldots \beta_{kit} = \beta_k \quad (4.9)$$

α_i is the constant term containing the individual effect, μ_i represents the individual effect. It is assumed that the slope parameters do not change according to the cross-sections and time series. In short, since it includes the individual effect, the fixed parameter is constant with time and varies according to the cross-sections (Tatoğlu, 2012).

4.1.3. The Random Effect Model

Unlike the fixed effect, if the individual effects that occur in each unit are treated as random in the model, the random effects model is used. Similar to the fixed effect, while all individual differences are captured in the intercept parameter, these individuals/countries in the sample are randomly selected. Therefore, since individual effects are chosen randomly in this model, the differences between individuals are random. In the random effects model, varies that occur due to cross-sections and time series are included in the model in the error term (4.11). For this reason, it is also called the *error component model*. Accordingly, when the panel data model is considered:

$$Y_{it} = \alpha_i + \beta_1 X_{1it} + \ldots + \beta_k X_{kit} + u_{it} \quad (4.10)$$

$$v_{it} = u_{it} + \mu_i \; ; \alpha_{it} = \alpha_i = \bar{\beta}_0 + \mu_i \quad (4.11)$$

Rewriting (4.10) according to (4.11);

$$Y_{it} = (\bar{\beta}_0 + \mu_i) + \beta_1 X_{1it} + \ldots + \beta_k X_{kit} + u_{it} \quad (4.12)$$

$$= \bar{\beta}_0 + \beta_1 X_{1it} + \ldots + \beta_k X_{kit} + v_{it} \quad (4.13)$$

where (4.11) u_{it} denotes residual errors and μ_i denotes the random individual differences which are called random effects (Hill et al., 2011).

To set up this model, it is necessary to make standard assumptions:

- Error distribution has zero mean, $E(u_i) = 0$
- It is uncorrelated across individuals, $cov(u_i, u_j) = 0$
- It has a constant variance, $var(u_i) = \sigma_u^2$

It also makes it possible to include the time-invariant variables that are mentioned in the fixed effects model and the random effects model. However, for this reason, it should be assumed that the explanatory variables are not correlated with the individual effect (Tatoğlu, 2012).

4.1.4. Hausman Specification Test

Hausman's Specification Test (1978) is the most common test to determine whether individual and/or time effects are correlated with independent variables (Hausman, 1978; Gujarati & Porter, 2009; Hill et al., 2011). The Hausman Test tests the basic hypothesis according to the Chi-square (χ^2) distribution. When calculating the Hausman test statistic, the difference between the Generalized Least Squares (GLS) estimators for random effects and the variance covariance matrices for fixed effects is considered. The equality of this difference to zero is measured by this test.

In the null hypothesis (H_0), "there is no correlation between the explanatory variable and the error term." is being tested. If there is no significant difference between the estimates obtained from the GLS and variance covariance matrices estimators, both estimators are consistent, H_0 is not rejected, the random effects estimator can be chosen according to these assumptions where u_{it} denotes residual errors and μ_i denotes the random individual differences:

$E(v_{it}, X_{it}) = 0$ so;

$E(u_{it}, X_{it}) = 0$ and $E(\mu_{it}, X_{it}) = 0$

In the alternative hypothesis (H_a) "there is a correlation between the explanatory variable and the error term." is being tested. H_a is not rejected if the difference between the estimates obtained from the estimators is large, the fixed effects estimator is consistent and valid.

4.2. The Model

As seen in the literature review in Table 1, many proxy variables are used to analyze the relationship between tourism and health-related variables. In this study, following Zaman et al. (2015), Folarin et al. (2017) and Nassani et al. (2018), the effects of countries' health expenditures this year and the past four years on today's tourism receipts in per capita terms for OECD countries will be included in the analyses. In addition, life expectancy and GDP per capita variables, which are essential to the model, are also included. Life expectancy data may represent countries' health risks for longevity, as mentioned in analysis of Hendricks and Graves (2012). For this reason, the life expectancy variable was added to the model in order to capture the effects that would increase the tourism receipts of the countries after COVID-19. As examined in most models in the literature, GDP per capita was added to the model to represent the size of the economies for countries.

The tourism receipts are determined as the dependent variable of the model. The fact that it has importance for factors such as current account deficit, import dependency, and foreign exchange gain, as mentioned in the previous tourism receipts section, has been effective. In addition, no such study has been carried out for this variable, which is of importance for OECD countries and is also a motivating factor for this study. As a result of the study, critical recommendations for OECD countries will be given with the model used. The general-form model functional relationship between tourism receipts and some selected explanatory variables can be written as follows:

$$TR = f\ (CHE, LE, GDP) \tag{4.14}$$

Using (4.14), specific empirical models can be written as follows:

$$lnTR_{it} = \beta_0 + \beta_1 lnCHE_{it} + \beta_2 lnCHE_{it-1} + \beta_3 lnCHE_{it-2} + \beta_4 lnCHE_{it-3} + \beta_5 lnCHE_{it-4} + \beta_6 lnLE_{it} + \beta_7 lnGDP_{it} + u_{it} \quad (4.15)$$

where $lnTR_{it}$ = log of the total international receipts per capita in USD dollar of OECD country *i* in year *t;* $lnCHE_{it}$ = log of the current expenditure on health per capita of OECD country *i* in year *t*; $lnCHE_{it-1}$ = log of the current expenditure on health per capita of OECD country *i* in year *t-1*; $lnCHE_{it-2}$ = log of the current expenditure on health per capita of OECD country *i* in year *t -2*; *;* $lnCHE_{it-3}$ = log of the current expenditure on health per capita of OECD country *i* in year *t-3*; *;* $lnCHE_{it-4}$ = log of the current expenditure on health per capita of OECD country *i* in year *t-4*; $lnLE_{it}$ = log of the years of life expectancy at birth of OECD country *i* in year *t*; $lnGDP_{it}$ = log of the GDP per capita of OECD country *i* in year *t.*

For analysis, log transformation was preferred in the model. In this way, it is aimed to bring the data to the normal distribution as much as possible. Thus, the statistical analysis results obtained from the data became more valid.

The expected sign of β_1, β_2 and β_3 in not of a theoretical concern because current year and last two year values are not expected to be statistically significantly associated. β_4 and β_5 are expected to have positive signs due to expectation that health services expenditures made for the development of the health sector in the past years will have a positive effect on the tourism receipts of that year. The expected value for β_6 is positive because life expectancy refers to the average number of years a newborn can expect to live, it can thus be considered an indicator of mortality and, by proxy, health conditions. For this reason, it is expected that the more developed the health conditions due to life expectancy in the country, the higher the income to be obtained from tourism. β_7 is expected to have a positive sign. GDP per capita is an important variable that can affect international tourism receipts. Per capita GDP, which is directly related to sustainable economic growth, is an indirect indicator of per capita income. Therefore, growth in GDP per capita is accepted as a determinant of economic growth (The World Bank, n.d). In addition, mostly in OECD countries, domestic tourism is at the center of the tourism industry and increases tourism receipts. The receipts from domestic tourism will positively affect the development of the country for international tourism. Therefore, it is expected that GDP per capita will positively affect tourism receipts.

In order to diversify the findings in the study a wide variety of variables is used in the model. A panel dataset with approximately one hundred variables was prepared using the OECD.Stat data for the period 2008-2019 (Appendix 1). Since basic statistical results and statistically significant variables are important to the model, those that could be significant in the model were selected from our variables. Variables such as tourism GDP, number of all causes of death, population, number of the total pharmaceutical market, air pollution, education level, trust in government, and exchange rate were used in estimation trials. Tourism GDP and the number of the total pharmaceutical market could not be included in the model due to the lack of reliable data. Variables such as education level, trust in government, and air pollution could not be used because they did not have statistical significance and they distorted the significance of the variables to be estimated in the model.

4.3. The Data

The OECD includes many countries as the best world tourism destinations. These countries account for the majority of global arrivals and tourism receipts with 56.9% and 61.1% respectively (OECD, 2020). For this reason, in this study, the data of OECD countries for the period 2008-2019 published by OECD.Stat were used and the data was accessed on 27.04.2021. Thus, the model was established with a short panel of 37 countries and 12 times.

The OECD countries in the model and their tourism receipts shares in 2018 shown in the Table 4.1.

Table 4.1 The OECD Countries and Their Tourism Receipts Shares in 2018 (%)

OECD Countries	Tourism Receipts Shares in 2008-2019 (%)	OECD Countries	Tourism Receipts Shares in 2008 - 2019 (%)
Australia	2.84	Korea	1.21
Austria	4.69	Lithuania	2.37
Belgium	2.21	Latvia	3.79
Canada	1.45	Luxembourg	7.85
Chile	1.27	Mexico	1.32
Colombia	1.52	Netherlands	2.14
Czech Republic	3.40	New Zealand	5.43
Denmark	2.58	Norway	1.08
Estonia	6.95	Poland	2.19
Finland	1.64	Portugal	6.61

France	2.21	Slovak Republic	2.58
Germany	1.35	Slovenia	5.43
Greece	6.40	Spain	4.64
Hungary	4.85	Sweden	2.30
Iceland	11.92	Switzerland	2.51
Ireland	3.53	Türkiye	3.49
Israel	2.25	United Kingdom	1.72
Italy	1.96	United States	1.15
Japan	0.49		

The data set was prepared as panel data and STATA 15 program was used to for estimations. Table 4.2 shows the descriptive statistics of the variables used in this study. Descriptive statistics are important for first-hand understanding the econometric effects of these variables in the model. Here, mean, median and mode values are classified as the criterion of central tendency, standard deviation is classified as the criterion of deviation from the mean (Çeviker & Özcan, 2020). Apart from the model, there are some statistical defects such as the lack of observations in the summaries of the tested variables. Therefore, it could not be used in the model. Descriptive statistics of these variables that are desired to be used in the Appendix 1 model but cannot be used are included. These are *HOSP* is the number of hospitals, *DEA* is the number of total deaths, *POP* is thousands of person total population, AIR is air pollution ambient particulate matter, *EDU* is average educational attainment among young adults, *SMO* is an average smoking percentage, *TGOV* is average trust in government, and *EXR* is the exchange rate monthly average national currency per USD.

Table 4.2 Descriptive Statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
TR_{it}	overall	1398.75	1860.14	66.05	13666.86	N = 413 n = 37 T = 11.16
	between		1805.79	99.94	9418.23	
	within		560.09	-3189.98	7841.29	
CHE_{it}	overall	3561.65	2410.71	372.78	11071.61	N = 443 n = 37 T = 11.97
	between		2396.87	477.39	9039.04	
	within		446.16	1727	5594.22	
LE_{it}	overall	79.91	2.78	71.80	84.20	N = 407 n = 37 T = 11
	between		2.73	73.87	83.38	
	within		0.73	77.31	81.85	
GDP_{it}	overall	38456.45	23488.67	5166.80	118981.90	N = 443 n = 37 T = 11.97
	between		23326.20	6632.79	110267.20	
	within		4466.05	21882.20	57418.15	

5. EMPIRICAL RESULTS

With the theoretical framework explained in the previous section, the effect of health services expenditures on tourism receipts in OECD countries were analyzed, and explanatory variables and methods were explained. Also, expectations regarding the effects of the variables were set. By testing these expectations empirically, it is aimed to offer an insight into the tourism and health policies to be determined by OECD countries after COVID-19.

In this section, empirical results begin with correlation matrix analysis in order to determine the correlation between independent variables. Then, the appropriate estimator to predict the model to be used in the analysis was selected with the Hausman Specification Test. The random effects model estimator was used to predict the model as a result of the test. Adhering to this, the existence of varying variance, autocorrelation, and cross-sectional dependency problems on the model was checked. Then, the findings obtained by using the Driscoll Kraay standard errors, which are resistant to these problems developed by Driscoll and Kraay (1998), are interpreted.

5.1. Correlation Coefficients

The problem of multicollinearity arises when some of the explanatory variables are correlated. In such a situation, it is difficult to separate the effects of these variables from each other in regression analysis. As expected from this study, if the effects of independent variables on the dependent variable are to be discussed, it is considered necessary to perform correlation matrix analysis. The correlation matrix shows the value of the relationship between each pair of variables in the model. If these values are close to -1 or 1, there is a high correlation. This means that these variables measure something similar (Siegel, 2016) (Schober & Schwarte, 2018).

Table 5.1 Correlation Matrices of Independent Variables

	CHE	**LE**	**GDP**
CHE	1		
LE	0.61	1	
GDP	0.89	0.62	1

The Table 5.1 shows the correlation matrix result of the explanatory variables of the model used in the analysis. According to these values, there is no multicollinearity problem among the variables in the model.

In addition to the correlation matrix, the relationship of the independent variables in the model was tested by using the Variance Inflation Factors (VIFS) method. The Table 5.2 show the VIF value for each independent variable and mean VIF value for the model. When the VIF value is less than 5, it is said that there is no multicollinearity. In cases where it is less than 10, it is accepted that there is no relationship even if there is a medium-intensity relationship.

Table 5.2 VIF analyses of Independent Variable

Variable	**VIF**	**1/VIF**
CHE	5.44	0.18
LE	5.30	0.18
GDP	1.66	0.6
Mean VIF	**4.13**	

According to the Table 5.2, mean VIF is less than 5. It can said that there is no multicollinearity in the model.

5.2. Determining the Correct Estimator

The Specification Test developed by Hausman (1978) is used to find the correct estimator in the panel data models of this study. With this test, the relationship between the independent variables and the individual effects is determined. The null hypothesis of the Hausman Test is that the difference between the parameters is not systematic, that is, random

effects model is suitable. In the alternative hypothesis, it refers to a systematic difference between parameters, that is, the suitability of fixed effects (Tatoğlu, 2012).

Table 5.3 Robust Hausman Specification Test Statistics

Test:	H_0: difference in coefficients not systematic
	H_a: difference in coefficients systematic
$Chi^2(5)$ =	1.53
Prob>χ^2 =	0.98

For the Hausman test to be reliable, the model must fulfill the random effects assumptions (equation 4.1.3). Since there were deviations from the variance in the model in this study, the Robust Hausman Test was used. As a result of the test (Table 5.2), the Chi-square test value (Prob>χ^2) is 0.98. The null hypothesis is accepted according to the Chi-square test value that is bigger than t the critical value (α =0.05). There was no correlation between independent variables and individual effects. For this reason, the random effects model estimator should be preferred for the model of the study.

5.3. Heteroscedasticity, Autocorrelation and Cross-Sectional Dependency

It is assumed that there is no heteroscedasticity, no autocorrelation and no cross-sectional dependency problems in panel data models. If these assumptions are violated, the efficiency of the estimator is forfeited and the standard errors are estimated with deviations. Therefore, after the model estimator is determined, tests should be done to validate these assumptions. If a deviation is found in the results of the tests, corrections for standard errors should be applied.

Since the individuals are chosen randomly in the random effects model, correlation between individuals is not expected. However, in some cases, it is necessary to perform tests against the presence of inter-cross sectionals correlation.

In the random panel data model, the Breusch-Pagan Lagrange Multiplier test is used for the heteroscedasticity problem. Levene (1960) and Brown and Forsythe (1974) suggested a robust heteroscedasticity test for models that do not show normal distribution. Levene-Brown-Forsythe robust heteroscedasticity test was used in this study. The hypothesis of test is:

H_0: $\sigma^2 = \sigma$ (The variances of the individuals are equal.) (5.12)

H_a: $\sigma^2 \neq \sigma$ (The variances of the individuals are not equal.) (5.13)

As a result of this test performed on the standard errors in the random effect panel data model, the test statistics was 0.00 and less than the critical value ($\alpha = 0.05$) (Table 5.3). In this case, the null hypothesis was rejected, i.e., heteroscedasticity problem was found.

Table 5.4 Heteroscedasticity Test Results for the Random Effects Model

LBW Test Statistics		**Degrees of Freedom**	**P-value**	
W0 =	8.36	df(36,222)	Prob>F =	0.00
W50 =	3.73	df(36,222)	Prob>F =	0.00
W10 =	8.37	df(36,222)	Prob>F =	0.00

In the components of the error terms of the random effects model (eq. 4.11), autocorrelation is common. If it is estimated by ignoring autocorrelation, it is inefficient even if the parameters are consistent and their standard errors must deviate. Therefore, the autocorrelation problem should also be tested in the random effects model. To this, Baltagi and Wu's (1999) Locally Best Invariant (LBI) test and Bhargava et al.'s (1982) Durbin-Watson (DW) test, the hypothesizes are:

H_0: $\rho = 0$ (The autocorrelation coefficient is equal to zero.) (5.14)

H_a : $\rho < 0 \; or \; \rho > 0$ (The autocorrelation coefficient is different to zero.) (5.15)

If the test statistics are less than the critical value 2, it is concluded that there is autocorrelation in the model.

Table 5.5 Autocorrelation Test Results for the Random Effects Model

AC Tests	**Results**
Modified Bhargava et al. Durbin-Watson Test	0.68
Baltagi-Wu LBI Test	1.15

Applied to the model in the study, while Bhargava et al. DW test statistic were 0.68, Baltagi-Wu LBI test statistic was 1.15 (Table 5.4). Since both test results are less than the

critical value 2 and the null hypothesis is rejected, i.e., there is an autocorrelation problem in the model.

Pesaran (2004) suggested cross-sectional dependency (CD) test for the short panels where *T* is less than *N*. This test is recommended as an alternative to the Breush-Pagan Lagrange Multiplier (LM) test because it gives more effective results in the *N*>*T* condition. The panel data used in the study is the short panel. Therefore, the Pesaran CD test was preferred to obtain a more efficient estimation. In addition, Friedman's and Free's CD tests are known to have similar asymptotic properties with Pesaran (De Hoyos & Sarafidis, 2006). The hypothesis of test is:

H_0: Cross-sections are independent.

H_a: Cross-sections are dependent.

Table 5.6 Cross-sectional Dependency Test for Random Effects Model

Pesaran's Test Results of Cross-sectional Independence	3.26
P-value	0.00

According to the test statistic (Table 5.5), the null hypothesis is rejected because the p-value (0.00) is less than the critical value ($\alpha = 0.05$). There is a relationship between cross-sections in the model.

5.4. Estimation Results

In this section, the effect of the independent variables on the dependent variable, its statistical significance and the overlap of this effect with the theoretical expectations are examined. In the previous section, heteroscedasticity, autocorrelation and cross-sectional dependency was determined for the error terms of the model. Driscoll and Kraay (1998) developed an estimation method with robust standard errors that can be used in the random effects panel data model against these problems.

Since the assumptions of the random effects model could not be met in our model, the standard errors were found to be deviated and inefficient for the analysis. Accordingly, robust standard errors were obtained with the Driscoll-Kraay estimation method, which

solves the heteroscedasticity, autocorrelation and cross-sectional dependency problems detected in the model. Table 5.6 shows panel data estimation results:

Table 5.7 The Driscoll-Kraay Estimator for the Random Effects Model

Dependent Variable	**Number of Obs.**	**Number of Groups**	**Period**
$lnTR_{it}$	259	37	2008-2019
Explanatory Variables	**Coefficient**	**Driscoll-Kraay St. Err.**	**P > |t|**
$lnCHE_{it}$	-0.05	0.09	0.54
$lnCHE_{it-1}$	-0.37	0.19	0.08
$lnCHE_{it-2}$	-0.21	0.09	0.06
$lnCHE_{it-3}$	0.04	0.19	0.83
$lnCHE_{it-4}$	0.39	0.11	0.00
$lnLE_{it}$	3.73	0.97	0.00
$lnGDP_{it}$	0.92	0.04	0.00
β_0	-17.51	3.24	0.00
Weighted Statistics			
Overall R^2			0.5
Wald χ^2 **Statistics**			10870.80
Prob > χ^2			0.00

$$lnTR_{it} = -17.51 + 0.39\, lnCHE_{it-4} + 3.73\, lnLE_{it} + 0.92\, lnGDP_{it} + u_{it}$$

Table 5.6 shows estimation results with Driscoll-Kraay robust standard errors for the random effects model. According to the Chi-square (χ^2) statistical value, which explains the significance of the model as a whole, it is a significant model at the 5% significance level. The R^2 value of the model, which is considered goodness of fit, was also high. The R^2 is a statistical value used to measure the level of fit of the regression, that is, the success of the regression model. Accordingly, the model is success with 50,34%. The reason for this high explanation that the model is population-adjusted. When the analysis result is evaluated as a whole, it can be said that there is a statistically significant relationship between dependent and explanatory variables to could interpreting the results.

First of all, it is seen that life expectancy at birth and GDP per capita values are statistically significant and their effect on the dependent variable is consistent with theoretical expectations. The coefficient value of the life expectancy at birth variable is 3.73. Accordingly, it is seen that a 1% growth in life expectancy at birth will increase international tourism receipts per capita of OECD countries by 3.73% ceterus paribus. Considering the response size of the relationship, since the coefficient of life expectancy (3.73) is greater than 1, it can be said that there is an elastic relation between life expectancy and tourism receipts in OECD countries. It is seen that the findings for the GDP per capita variable, which is another complementary variable and represents the development in tourism receipts analysis, meet the theoretical expectations. The coefficient value of the GDP per capita variable is 0.92. Accordingly, it is seen that a 1% increase in GDP per capita in OECD countries in that year will increase the international tourism receipts per capita of countries almost by 0.92% ceterus paribus.

In this study, the main purpose is to investigate the effect of health expenditures on tourism receipts of OECD countries. Therefore, part of the interest in this analysis is how the current expenditure on health per capita affects international tourism receipts per capita. In this context, according to the analysis findings, it is seen that the current year and last three year's health expenditures for tourism receipts are statistically insignificant. This partially overlaps with the theoretical expectation mentioned in the previous section. It is possible that the expenditures of the countries' health sector will not be expected to respond as an immediate gain in the tourism sector. Therefore, the statistical insignificance of the variables seems reasonable. On the other hand, it is seen that health expenditures with a four-year lag have a positive effect on tourism receipts, as expected from the theoretical point. The coefficient of the four-year lag health expenditures variable is 0.4. This means that a 1% increase in health expenditures in OECD countries will increase tourism receipts by 0.4% four years later, ceterus paribus Considering the response size of the relationship, the health expenditures per capita variable coefficient (0.39) is less than 1. Accordingly, there is an inelastic relationship between the tourism receipts and the health expenditures, population-adjusted, ceterus paribus.

The findings of the study coincide with Folarin et al. (2017), Nassani et al. (2018) and Ozturk (2015). In addition, studies in the literature reviewed for the study mostly used causality analysis. From these, Lee (2009), Lee and Hung (2010), Li et al. (2013), Qureshi et al. (2017) and Zaman et al. (2015) which found a causality relationship between tourism

and health in analysis, supports our findings. In addition, the lack of a significant relationship between the two variables in Çeviker and Özcan (2020) analysis contradicts our study. Finally, Chan-Fatt and Abdul-Rahim (2014), Hung et al. (2012) and Sokhanvar et al. (2018) findings suggest the existence of a negative relationship and contradict our model.

6. CONCLUSION

Tourism plays an important role for national economies with economic functions such as creating employment, building foreign exchange resources, and alleviating the current account deficit. So much so that with 1.5 billion international tourist arrivals in 2019, tourism continues to be one of the important economic sectors in the world on a global scale.

For OECD countries, the tourism sector directly contributes to approximately 4.4% of GDP, 4.9% of employment, and 21.5% of service exports (OECD, 2020). It has undeniable importance for sustainable development and growth for OECD countries as well as all over the world. For these functions such as development, growth, and employment to be more effective in the country's economies, support from complementary sectors is needed.

Tourism, which has an uncertain development in the short term due to the climate and health conditions after COVID-19, is expected to continue to grow steadily in the long term. However, although the increased human mobility with globalization gives well results for tourism, this mobility poses a risk for the health sector. As a matter of fact, with the COVID-19 epidemic, which became official in March 2020, tourism activity all over the world came to a standstill as a result of the sensitivity of the tourism sector to global crises. After the economic problems caused by the epidemic, there has been a great loss of employment and income in the tourism field in the countries. In this context, it is inevitable to strengthen the relationship between the developments in the health sector of the countries and the economic activities they will obtain from tourism. In this period when globalization is inevitable, travel priorities for individuals have changed and it is considered a determinant in the health services provided by countries.

This study aims to draw attention to the significant deficiency in the literature and to analyze the contribution of health expenditures to tourism receipts of OECD countries, including hit destinations. For this, panel data were created with data from 37 OECD countries and the period 2008-2019. In line with the purpose of the study, international tourism receipts were selected as the dependent variable, while health expenditures, life expectancy, and GDP were determined as explanatory variables. This model in logarithmic

form was analyzed with the random effects model as a result of the specification test. Then, the model was estimated using the Driscoll-Kraay standard errors to correct the deviated standard errors.

According to the findings, it is seen that the model is significant in the chi-square (χ^2) distribution at 1% and 5% significance levels. The R^2 value, which is the goodness of fit value of the model, is high adequately with 0.5. Then, the findings indicate statistically significant relationships as a whole.

The life expectancy variable coefficient was 3.73. This means that a 1% improvement in life expectancy results in a 3.73% increase in tourism receipts per capita ceterus paribus. And Considering the response size of the relationship, since the coefficient of life expectancy (3.73) is greater than 1, it can be said that there is an elastic relation between life expectancy and tourism receipts, population-adjusted in OECD countries. This result indirectly meets the aim of the study. As mentioned in UN, life expectancy at birth is an indicator of mortality/longevity and also a proxy of health conditions (United Nations, 2007a). Similarly, the International Conference on Population and Development (ICPD) states that life expectancy rates for countries are an important indicator of access to health services (United Nations, 2007b). Therefore, such a positive impact on tourism receipts should be thoroughly evaluated by policymakers.

If we discuss its direct effect on tourism, it has been observed in many studies that as life expectancy rates increase, the motivation for leisure activities increases, and thus, individuals are more prone to tourism -new discoveries and different experiences- with life-long savings. Changing world demographics, a declining workforce, falling birth rates, and an aging population have many effects on social and economic sectors. Considering that there are many developed European countries among OECD countries, the importance of individuals with adequate health services, economic welfare, and time for the tourism sector should not be overlooked.

The GDP per capita supplementary variable coefficient was 0.92. This means that a 1% increase in GDP per capita will increase tourism receipts by 0.92% ceterus paribus. This result is in line with the theoretical expectation. As can be seen in various empirical tourism studies such as tourism receipts, tourist arrivals and departures, tourism demand, GDP per capita is the main determinant of tourism receipts in OECD countries. However, according

to OECD's post-COVID-19 macroeconomic forecasts, policy uncertainty, weak trade and investment flow problems prevail globally. It is predicted that the GDP growth of OECD countries will remain at the level of 3% in recent years (OECD, 2020).

For tourism, which is an important source of income, policymakers should manage this process well and bring structural decisions about geopolitical and health crises as well as trade, investment and digitalization for countries. In cooperation with complementary sectors like health, it should be ensured that tourism receipts increase due to GDP per capita growth by taking policies such as crisis resilience, efficient resources and green investments for tourism (UNEP, 2012).

Since the value of the health expenditures variable, which is the subject of the main purpose of the analysis, is not expected to have an immediate effect on tourism receipts, till four lagged data are also included in the model. As a matter of fact, as predicted, the variables of the last three-year health expenditures were statistically insignificant for the model. In addition, health expectations 4 years ago are statistically significant and the coefficient value is 0.4. This means that a 1% improvement in health expenditure this year will increase tourism receipts by 0.4% after 4 years, population-adjusted, ceterus paribus. This is an important finding of the study. According to this result, large infrastructure and human investments such as hospital construction, doctor training, health technologies, etc. may affect tourism revenues in the long run. In other words, the positive effect of large investments in health expenditures is seen in tourism revenues after a few years.

According to the latest estimates in OECD countries, health expenditures made by governments are expected to increase by 8.1% due to the COVID-19 outbreak. The reason for this is that the share of health expenditures in OECD countries in 2019, which was 8.8% in GDP, increased to 9.7% in 2020 (OECD, 2022). Although these expected increases in health expenditures are essential, countries should plan to increase their health expenditures steadily in the long term, thus increasing their tourism receipts by taking the opportunity of increasing human mobility with irresistible globalization. Countries can find the opportunity to generate sustainable, less crisis-sensitive tourism income if steps are taken to strengthen their health systems, encourage health investments in a possible crisis, and increase the accessibility of health services.

Finally, this study was deemed necessary to reveal the relationship between tourism and health sectors after a major global crisis COVID-19. Because the literature is quite insufficient for this. In light of the findings of the study, a wider time interval or a wider variables set may be preferred to strengthen the panel data and to see the effects more effectively. The OECD includes many Mediterranean countries. Again, in light of the study findings, an analysis can be made for OECD Mediterranean Countries by narrowing the sample. In addition, different health status variables such as the life expectancy variable in our model can be added to show the tourism and health relationship more clearly.

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8. APPENDICES

Appendix-1

Table 8.1 Descriptive Statistic Prepared for Study's Model

Variable		Mean	Std. Dev.	Min	Max	Observations
$HOSP_{it}$	overall	0.03	0.01	0.01	0.08	N = 358 n = 33 T = 10.85
	between		0.01	0.01	0.07	
	within		0.003	0.01	0.05	
DEA_{it}	overall	8.66	2.44	3.91	14.38	N = 350 n = 37 T = 9.46
	between		2.44	4.42	14.17	
	within		0.26	7.79	9.58	
POP_{it}	overall	35601.31	57219.53	317.40	328239.50	N = 443 n = 37 T = 11.97
	between		57866.49	330.34	316946.60	
	within		1735.59	22748.74	46894.24	
AIR_{it}	overall	198.64	583.13	0.91	3590.01	N = 444 n = 37 T = 12
	between		582.72	1.30	3024.89	
	within		94.39	-441.92	778.53	
EDU_{it}	overall	83.06	12.33	35.08	98.33	N = 412 n = 36 T = 11.44
	between		12.00	43.28	98.00	
	within		2.82	68.17	96.75	

SMO_{it}	overall	18.21	5.17	7.60	39.70	N = 228 n = 37 T = 6.16
	between		5.13	9.28	33.48	
	within		2.18	12.03	24.43	
$TGOV_{it}$	overall	41.71	15.72	9.99	85.00	N = 415 n = 37 T = 11.22
	between		14.21	21.52	77.03	
	within		7.89	21.00	68.73	
EXR_{it}	overall	128.64	443.39	0.55	3280.83	N = 432 n = 36 T = 12
	between		439.36	0.67	2377	
	within		92.14	-451.46	1032.47	

Appendix-2

Table 8.2 Panel Data Variables Prepared for This Study

Variable Categories	Variable Names and Measurements	Variable Categories	Variable Names and Measurements	Variable Categories	Variable Names and Measurements
Total domestic trips (demand survey)	Overnight visitors, Tourist number	Value of a statistical life	Household air pollution from solid fuels, National currency, Millions	Natural Capital (Future Well-being)	Recycling rate, Average
Nights in all types of accommodation in domestic tourism (demand survey)	All type accommodation, Number	Value of a statistical life	Climate risks, High temperature, National currency, Millions	Human Capital (Future Well-being)	Educational attainment among young adults, Average
Nights in all types of accommodation in domestic tourism (demand survey)	Hotels and similar establishments, Number	Value of a statistical life,	Climate risks, Low temperature, National currency, Millions	Human Capital (Future Well-being)	Labor underutilization rate, Average
Nights in all types of accommodation in domestic tourism (demand survey)	Private accommodation, Number	Value of a statistical life	Unsafe water source, National currency, Millions	Human Capital (Future Well-being)	Premature mortality, Average
Total international arrivals	Overnight and Same day visitors, Tourist number	Value of a statistical life	No access to hand-washing facility, National currency, Millions	Human Capital (Future Well-being)	Smoking prevalence, Average
Total international departures for outbound tourism (demand survey)	Overnight visitors, Tourist number	Value of a statistical life	Second-hand smoke, National currency, Millions	Human Capital (Future Well-being)	Obesity prevalence, Average

Tourism GDP (direct) as % of total GDP	Percentage	Balance of Payments	Current account, Balance, US-Dollar converted	Social Capital (Future Well-being)	Trust in others, Average
Total tourism employment (direct) as % of total employment	Percentage	Balance of Payments	Goods, Balance, US-Dollar converted	Social Capital (Future Well-being)	Trust in government, Average
Total international receipts	US Dollars	Balance of Payments	Services, Balance, US-Dollar converted	Economic Capital (Future Well-being)	Produced fixed assets, Average
Total international expenditure	US Dollars	Balance of Payments	Primary income, Balance, US-Dollar converted	Economic Capital (Future Well-being)	Intellectual property assets, Average
Enterprises of total tourism industries	Tourism industries	Balance of Payments	Secondary income, Balance, US-Dollar converted	Economic Capital (Future Well-being)	Investment in R&D, Average
Enterprises of total tourism industries	Travel agencies and other reservation services industry	Balance of Payments (US-Dollar converted)	Capital account, Balance, US-Dollar converted	Economic Capital (Future Well-being)	Household debt, Average
Enterprises of total tourism industries	All type of passenger transport	Balance of Payments	Financial account, Net, US-Dollar converted	CPI: Energy	Percentage change from previous period
Enterprises of total tourism industries	Air passenger transport	Balance of Payments	Direct investment, Net, US-Dollar converted	CPI: Services	Percentage change from previous period
Enterprises of total tourism industries	Railways passenger transport	Natural Capital (Future Well-being)	Carbon footprint, Average	FDI financial flows - Total (Inward)	US Dollar
Enterprises of total tourism industries	Road passenger transport	Natural Capital (Future Well-being)	Renewable energy, Average	FDI financial flows - Total (Inward)	As a share of GDP
Enterprises of total tourism industries	Water passenger transport	Tobacco consumption	Grammes per capita (15+)	FDI positions -Total (Inward)	US Dollar
Employment of total tourism industries	Tourism industries	Total calories supply	Kilocalories per capita per day	FDI positions -Total (Inward)	As a share of GDP

Employment of total tourism industries	Travel agencies and other reservation services industry	Alcohol consumption	Liters per capita (15+)	FDI income - Total (Inward)	US Dollar
Employment of total tourism industries	All type of Passenger transport	Overweight or obese population, measured	% of total population	FDI income - Total (Inward)	As a share of GDP
Employment of total tourism industries	Air passenger transport	Total pharmaceutical market	% share of generics, Value	FDI financial flows - Total (outward)	US Dollar
Employment of total tourism industries	Railways passenger transport	All health revenues of financing schemes	Share of gross domestic product	FDI financial flows - Total (outward)	As a share of GDP
Employment of total tourism industries	Road passenger transport	Total public and primary private health insurance	% of total population covered	FDI positions -Total (outward)	US Dollar
Employment of total tourism industries	Water passenger transport	Total population, incl. France Metropolitan + D.O.M. (overseas departments)	Thousands of persons	FDI positions -Total (outward)	As a share of GDP
Current expenditure on health	Share of gross domestic product	Population: 65 years old and over	% of total population	FDI income - Total (outward)	US Dollar
Total physicians	Number of persons, Head counts	Gross domestic product (GDP)	Million US$ at exchange rate	FDI income - Total (outward)	As a share of GDP
Hospitals	Number	Gross domestic product (GDP)	Million US$, purchasing power parity	Consumer prices	Level, ratio or index
Life expectancy at birth	Years	Gross domestic product (GDP)	/capita, US$ exchange rate	Exchange rates, monthly averages, National currency per US dollar	Level, ratio or index
All causes of death	Number of total deaths	Gross domestic product (GDP)	/capita, US$ purchasing power parity		

All causes of death	Deaths per 100 000 population, Standardized rates)	Value of a statistical life	Air pollution, Ambient Particulate Matter, National currency, Millions		